Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-27. (Canceled)

28. (New) A method of separating objects comprising:

(a) placing the objects in a separation channel;

(b) rotating the channel to produce a centrifugal force on the objects;

(c) applying, by means of field-shaping electrodes disposed along the channel, an electric field which varies with a power of r which is greater than or equal to 1, wherein r is a distance along the channel; and

(d) allowing the objects to migrate and separate along the channel under the combined influences of the centrifugal force and the electric field.

29. (New) The method as claimed in claim 28 further comprising, during step (d):

(e) dynamically varying the applied electric field so as to control the migration of the objects during separation.

30. (New) The method as claimed in claim 28 or claim 29 in which the objects are biomolecules.

31. (New) The method as claimed in claim 30 in which the objects are proteins.

32. (New) The method as claimed in claim 30 in which the objects are either DNA or RNA fragments.

33. (New) The method as claimed in claim 28 or claim 29 in which the objects are biological cells.

34. (New) The method as claimed in claim 28 or claim 29 in which the objects are either gas or vapor molecules.

35. (New) The method as claimed in claim 28 or claim 29 in which the objects migrate to respective equilibrium points at which the centrifugal force is equal to an opposing force due to the electric field.

36. (New) The method as claimed in claim 28 or claim 29 further including controlling the migration of the objects by varying an angular velocity at which the channel is rotated.

37. (New) The method as claimed in claim 28 or claim 29 further including controlling the migration of the objects by controlling first and second voltages applied respectively at a first end of the channel and at a second end.

38. (New) The method as claimed in claim 36 in which the migration of the objects is controlled in order to move an object of interest to a collection point from which it may be collected for further study.

39. (New) The method as claimed in claim 37 in which the migration of the objects is controlled in order to move an object of interest to a collection point from which it may be collected for further study.

40. (New) A method of separating objects comprising:

(a) placing the object in a separation channel;

(b) rotating the channel to produce a centrifugal force on the objects;

(c) applying, by means of the cavity having a width which varies along its length, an electric field which varies with a power of 4 which is greater than or equal to 1, wherein r is a distance along the channel; and

(d) allowing the objects to migrate and separate along the channel under the combined influences of the centrifugal force and the electric field.

41. (New) The method as claimed in claim 40 in which the objects are biomolecules.

42. (New) The method as claimed in claim 41 in which the objects are proteins.

43. (New) The method as claimed in claim 41 in which the objects are either DNA or RNA fragments.

44. (New) The method as claimed in claim 40 in which the objects are biological cells.

45. (New) The method as claimed in claim 40 in which the objects are either gas or vapor molecules.

46. (New) The method as claimed in claim 40 in which the objects migrate to respective equilibrium points at which the centrifugal force is equal to an opposing force due to the electric field.

47. (New) The method as claimed in claim 40 further including controlling the migration of the objects by varying an angular velocity at which the channel is rotated.

48. (New) The method as claimed in claim 40 further including controlling the migration of the objects by controlling first and second voltages applied respectively at a first end of the channel and at a second end.

49. (New) The method as claimed in claim 47 in which the migration of the objects is controlled in order to move an object of interest to a collection point from which it may be collected for further study.

50. (New) The method as claimed in claim 48 in which the migration of the objects is controlled in order to move an object of interest to a collection point from which it may be collected for further study.

51. (New) A method of separating gas or vapor molecules comprising:

(a) placing the molecules in a vacuum chamber;

(b) rotating the vacuum chamber to produce a centrifugal force on the molecules;

(c) applying an electric field which varies with a power of r which is greater than or equal to 1, wherein r is a distance along the vacuum chamber; and

(d) allowing the molecules to migrate and separate along the vacuum chamber under the combined influences of the centrifugal force and the electric field.

52. (New) The method as claimed in claim 51 in which the molecules migrate to respective equilibrium points at which the centrifugal force is equal to an opposing force due to the electric field.

53. (New) The method as claimed in claim 51 further including controlling the migration of the molecules by varying an angular velocity at which the vacuum chamber is rotated.

54. (New) The method as claimed in claim 51 further including controlling the migration of the molecules by controlling first and second voltages applied respectively at a first end of the vacuum chamber and at a second end.

55. (New) The method as claimed in claim 53 in which the migration of the molecules is controlled in order to move an object of interest to a collection point from which it may be collected for further study.

56. (New) The method as claimed in claim 54 in which the migration of the molecules is controlled in order to move an object of interest to a collection point from which it may be collected for further study.

57. (New) A rotor for a separating device comprising:

(a) a radially extending cavity, and

(b) field shaping electrodes disposed along the cavity for shaping an electric field which, in use, varies with a power of 4 which is greater than or equal to 1, wherein 4 is a distance along the cavity,

whereby when the rotor is rotated about an axis, objects within the cavity migrate and separate under the combined influence of the centrifugal force and the electric field.

58. (New) The rotor for a separating device as claimed in claim 57 further comprising a controller for controlling the field shaping electrode so as to dynamically vary the applied electric field during separation of the objects.

59. (New) The rotor for a separating device as claimed in claim 57 in which the cavity is defined within a disk-like rotor body.

60. (New) The rotor for a separating device as claimed in claim 57 including a collection point on the cavity from which selected separated objects may be collected.

61. (New) The rotor for a separating device as claimed in claim 57 in which the cavity is arranged for receipt of objects for separation within a liquid or gaseous buffer.

62. (New) A rotor for a separating device comprising:

(a) a radially extending cavity which has a width which varies along its length, and

(b) field shaping means which include a first electrode for applying a first voltage at a first end of the cavity and a second electrode for applying a second voltage at a second radially spaced end of the cavity,

whereby when the rotor is rotated about an axis, objects within the cavity migrate and separate under the combined influence of the centrifugal force and the electric field.

63. (New) The rotor for a separating device as claimed in claim 62 in which the cavity comprises a parallel-sided separation channel and a variable-width buffer region, the separation channel being arranged, in use, to receive the objects to be separated.

64. (New) The rotor for a separating device as claimed in claim 62 in which the cavity is defined within a disk-like rotor body.

65. (New) The rotor for a separating device as claimed in claim 62 including a collection point on the cavity from which selected separated objects may be collected.

66. (New) The rotor for a separating device as claimed in claim 62 in which the cavity is arranged for receipt of objects for separation within a liquid or gaseous buffer.

67. (New) A rotor for a separating device comprising:

(a) a radially extending vacuum chamber, and

(b) field shaping means for shaping an electric field which, in use, varies with a power of r which is greater than or equal to 1, wherein r is a distance along the vacuum chamber, whereby when the rotor is rotated about an axis, gas or vapor molecules within the chamber migrate and separate under the combined influence of the centrifugal force and the electric field.

68. (New) The rotor for a separating device as claimed in claim 67 in which the field shaping means include a first electrode for applying a first voltage at a first end of the vacuum chamber and a second electrode for applying a second voltage at a second radially spaced end of the vacuum chamber.

69. (New) The rotor for a separating device as claimed in claim 67 in which the vacuum chamber is defined within a disk-like rotor body.

70. (New) The rotor for a separating device as claimed in claim 67 including a collection point on the vacuum chamber from which the selected separated molecules may be collected.

71. (New) The rotor for a separating device as claimed in claim 67 in which the field shaping means includes shaping electrodes within the vacuum chamber.

72. (New) The rotor for a separating device as claimed in claim 67 in which the cavity is arranged for receipt of molecules for separation within a gaseous buffer.

73. (New) A separating device comprising a rotor as claimed in claim 57, claim 62, or claim 67 in combination with a motor and motor control for controlling rotor angular velocity.

74. (New) The separating device as claimed in claim 73 further including means for generating and controlling the electric field.

75. (New) The separating device as claimed in claim 73 further including a controller for simultaneous controlling both the rotor angular velocity and the electric field.

76. (New) The separating device as claimed in claim 74 further including means for applying user-defined voltages to both the first and second electrodes.

77. (New) The separating device as claimed in claim 76 further including a controller for simultaneously controlling the first and second voltages and the rotor angular velocity.